Interactive Web Visualization of Birth and Pregnancy Trends by Maternal Age, Race and Ethnicity, and Marital Status: United States, 1909–2013

Li Lu, Sally C. Curtin, Brady Hamilton, and Yinong Chong
Centers for Disease Control and Prevention's
National Center for Health Statistics

What can visualization tools do?

Mega data integration in sizes and formats

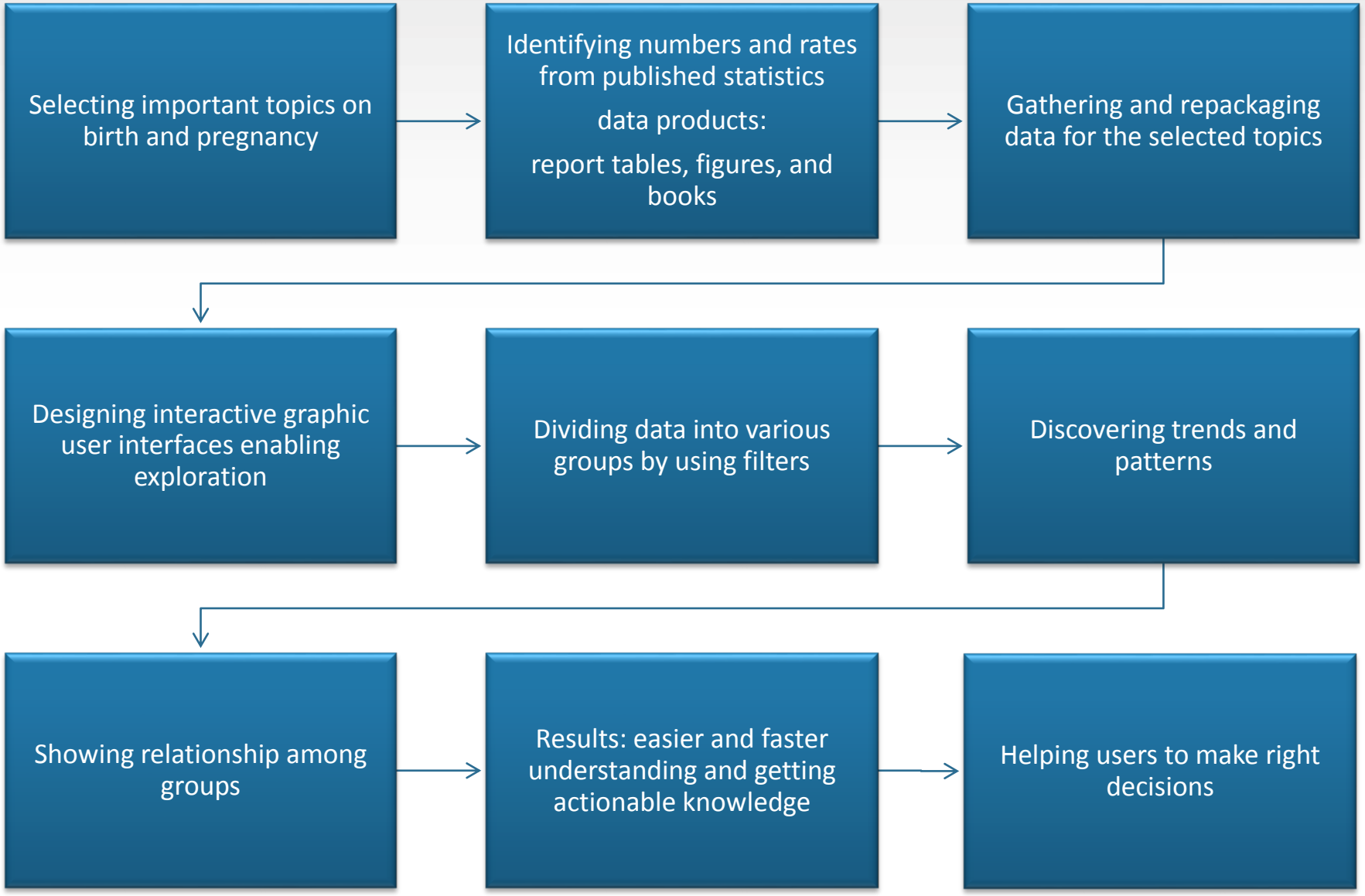
Analyses and graphics rendering combined

Dynamic and interactive user interface

Automated real time reporting

Instant publication and sharing

How can data visualization help data analysis?

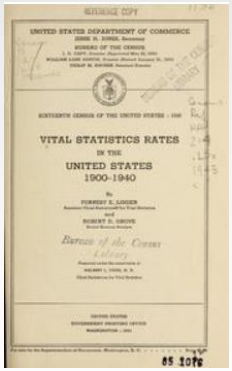


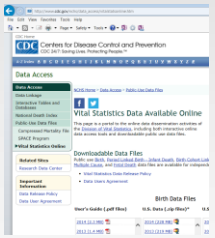
What methods are used for data visualization?

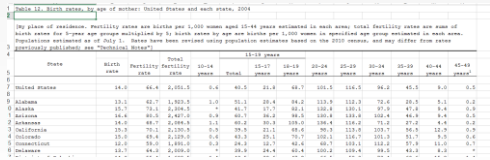
Selecting a topic and gathering and packaging published datasets in the correct format

Developing visualization worksheets, dashboards, and storyboards in Tableau Desktop Professional

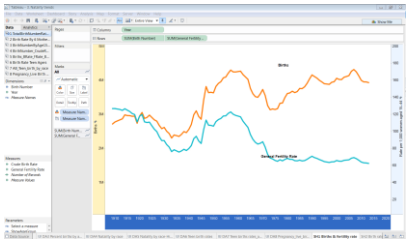
Publishing to Tableau Public Server and embedding the short code to a story on the pilot NCHS Data Visualization Gallery Site

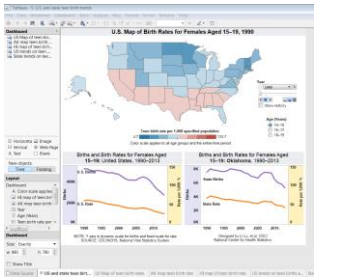


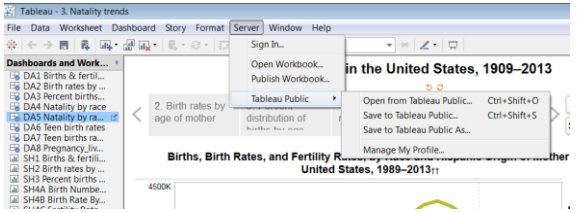




	A	B	C	D	E	F	G	H
1	Year	State Data Year	State	Age (Years)	State Rate	State Births	U.S. Births	U.S. Birth Rate
2	2012	2012	Alabama	15–19	39.2	6,195	305388	29.4
3	2012	2012	Alaska	15–19	34.5	817	305388	29.4
4	2012	2012	Arizona	15–19	37.4	8,119	305388	29.4
5	2012	2012	Arkansas	15–19	45.7	4,349	305388	29.4
6	2012	2012	California	15–19	26.5	34,890	305388	29.4
7	2012	2012	Colorado	15–19	25.4	4,154	305388	29.4
8	2012	2012	Connecticut	15–19	15.1	1,889	305388	29.4
9	2012	2012	Delaware	15–19	25	761	305388	29.4
10	2012	2012	District of Columbia	15–19	38.6	791	305388	29.4

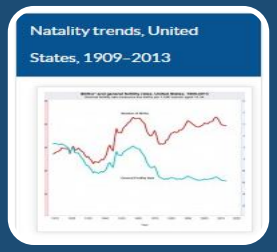




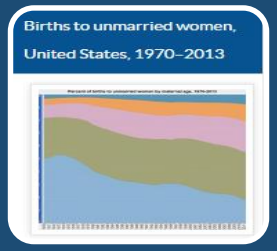


Results

Published on CDC website: three storyboards/dashboards on U.S. births and pregnancies from 1909 to 2013



General trends in the number, rate, and percent distribution of births

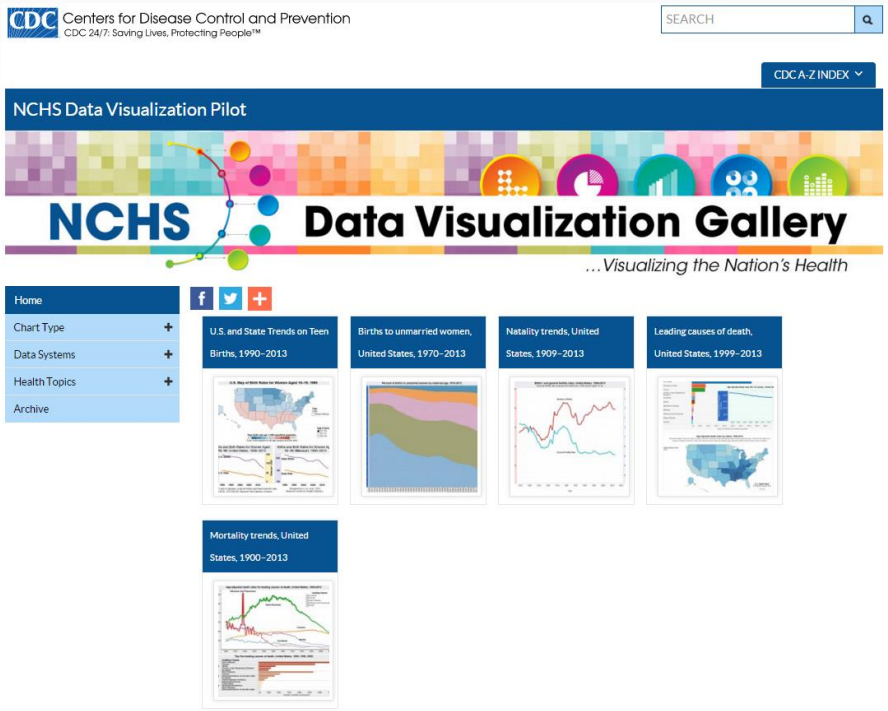


Pregnancy, births rates, and percent distributions of births to unmarried women

State births and state birth rates to teenage women

A demonstration of the data visualization gallery

- http://blogs.cdc.gov/nchs-data-visualization/



Conclusions

- Flexible, expressive, and interactive data visualization is useful in analyzing and presenting data for selected topics by exploration
- Dynamic: allow filtering, exploration, and drilling down
- Combine multiple data sources in one dashboard—easy to find, insightful information such as trends, patterns, and relationships
- New data can be added to the data source and the data visualization can be updated automatically and republished quickly
- An important adjunct to disseminating vital data
- Put end users in the driver's seat—fast creation of charts of interest
- Easy sharing with support for existing security and section 508 compliance

Acknowledgments

- CDC's NCHS: Director, Charles Rothwell
- Division of Vital Statistics (DVS): Director, Delton Atkinson, and Deputy Director, Paul Sutton
- DVS Reproductive Statistics Branch: Chief, Amy Branum
- DVS Mortality Statistics Branch: Betzaida Tejada-Vera
- DVS Information Technology Branch: Chief, Rajesh Virkar, Steve Steimel, and Teddy Weldeamlak
- Office of Information Services: Anthony Lipphardt
- Office of Information Technology: John Dolinka